Kirk D. Knobelspiesse

knobelspiesse (at) hotmail.com

EDUCATION

Columbia University, New York, New York. Graduate studies in the Fu Foundation, School of Engineering and Applied Science, Department of Applied Physics and Applied Mathematics. September 2004 to present. Research at the NASA Goddard Institute for Space Studies. Advisors: Drs. Barbara Carlson, Brian Cairns and Adam Sobel.

Rochester Institute of Technology, Rochester, New York. Master's of Science, Imaging Science, Chester F. Carlson Center for Imaging Science. Concentration: Remote Sensing. Thesis title: Atmospheric Compensation for SeaWiFS images of Lake Superior Utilizing Spatial Information. 2000. Advisor: Dr. Anthony Vodacek.

Rochester Institute of Technology, Rochester, New York. Bachelor's Degree of Science, Imaging and Photographic Technology. GPA: 3.7/4.0, 1998. Graduated with Honors.

EXPERIENCE

NASA Goddard Space Flight Center, Science Systems and Applications, Inc., Greenbelt, Maryland. Position: Calibration / Validation Analyst. October 2000 to July 2004. Worked on two projects:

Sea-Viewing Wide Field-of-View Sensor (SeaWiFS) Project: Performed daily quality control checks on imagery from the SeaWiFS multispectral remote sensing satellite. Participated in SeaWiFS calibration and validation activities.

Sensor Intercomparison and Merger for Biological and Interdisciplinary Oceanic Studies (SIMBIOS) Project: Participated in efforts to compare ocean color remote sensing data using *in situ* (ground) measurements of geophysical properties at the time of satellite overpass. Helped calibrate and deploy a variety of Sun Photometers, which measure Aerosol Optical Thickness (AOT). Wrote algorithms and software to calibrate, process, screen and analyze data from Sun Photometers in preparation for database archival. Participated in oceanographic research cruises, such as the CalCOFI cruise off the coast of San Diego during the summer of 2001 and the NORBAL cruise in the western Mediterranean in the fall of 2002.

Secured Document Systems, Inc., Rochester, New York. Position: Head of Research (for a small company). Duties included the development of anti-counterfeiting document patterns that alias when reproduced on digital copiers and scanners. May 1998 to July 1999.

Calspan / University at Buffalo Research Center (CUBRC), Buffalo, New York. Position: Computer Programmer. Duties included creating a full application with Visual Basic to assist the training of members of the U.S. Olympic Ski Team. May 1997 to August 1997.

University of Rochester, Laboratory for Laser Energetics, Omega Operations Group, Rochester, New York. Position: Photographic Technician. Duties included experimental film processing and scientific image processing with PV-Wave and C++ to support laser fusion research facility. October 1996 to May 1997.

NASA Lewis Research Center, Imaging Technology Center, Scientific Imaging Group, Cortez III Service Corporation, Cleveland, Ohio. Position: Assistant Imaging Specialist, duties included high speed imaging support for researchers, 16mm film editing, Web page development. May 1996 to August 1996.

General Motors Corp., GMPT Tonawanda Engine plant, Production Control and Logistics department, Tonawanda, New York, Position: Parts Expediter, duties included coordinating logistics flow of incoming production use parts to the largest automotive engine plant in the world. May 1995 to August 1995.

SKILLS

Field Experience: Participated in the following scientific field experiments:

NASA Intercontinental Chemical Transport Experiment-North America Phase B (INTEX-B) which was co-ordinated with the multi-agency Megacity Initiative: Local and Global Research Observations (MILAGRO). April – March, 2006, Veracruz, Mexico. Participated in the deployment of the Research Scanning Polarimeter on repeated flights of a Jetstream-31 aircraft.

Aerosol LIdar Validation Experiment (ALIVE). September, 2005, Ponca City, Oklahoma. Participated in the deployment of the Research Scanning Polarimeter on repleated flights of a Jetstream-31 aircraft.

NORBAL-3 cruise, Gulf of Lyon, Mediterranean Sea, October, 2002. Deployed a Micropulse LIDAR, Fast-Rotating Shadowband Radiometer (FRSR) and hand held sun photometer (SIMBAD-A) on the Italian based R/V Urania.

CALCOFI-0107 cruise, Eastern Pacific Ocean, July, 2001. Deployed a variety of hand held sun photometers (Microtops, SIMBAD-A) and assisted with general ship research duties on the San Diego, CA, based R/V New Horizon.

Programming: IDL, MATLAB, some C++

Hardware: Well versed with the operation, calibration and data processing for a variety of Sun Photometers, such as Solar Light's Microtops II and Laboratoire d'Optique Atmospherique's SIMBAD and SIMBADA. Familiar with various

scientific imaging and water optics equipment, such as the HOBI Labs HydroScat-2 water backscatter meter, and the Shimadzu UV2100U spectrometer. Also trained in the use and operation of digital and silver halide photographic darkrooms.

Software: Well versed with imaging and remote sensing software packages, such as Research Systems, Inc.'s IDL and ENVI. Comfortable with Windows, Macintosh OS X, LINUX and UNIX operating systems.

Study Material: (Graduate and Undergraduate class titles) Geophysical Fluid Dynamics, Computational Mathematics, Numerical Partial Differential Equations, Electrodynamics, Fluid Dynamics, Atmospheric Science, Nonlinear Dynamical Systems, Partial Differential Equations, Statistical Mechanics, Principles of Applied Mathematics, Remote Sensing, Hyperspectral Remote Sensing, Linear Image Mathematics, Digital Image Processing, Noise and Random Processes, Fundamentals of Statistics, Materials and Processes of Photography, Photographic Sensitometry, Photographic Chemistry, Photographic Optics, Electronic Systems Design, High Speed / Time Lapse Photography, Color Measurement, Color Printing Theory, Color Photographic Design, Non-conventional Imaging Systems.

PUBLICATIONS

Wang, M., **K. D. Knobelspiesse**, and C. R. McClain, 2005: Study of the Sea-Viewing Wide Field-of-View Sensor (SeaWiFS) aerosol optical property data over ocean in combination with the ocean color products, J. Geophys. Res., Vol 110, D10S06.

Chu, D. A., L. A. Remer, Y.J. Kaufman, B. Schmid, J. Redemann, **K.D. Knobelspiesse**, J.-D. Chern, J. Livingston, P.B. Russell, X. Xiong, and W. Ridgway, 2005: Evaluation of aerosol properties over ocean from Moderate Resolution Imaging Spectroradiometer (MODIS) during ACE-Asia, J. Geophys. Res., Vol. 110, D07308.

Knobelspiesse, K.D., C. Pietras, G.S. Fargion, M. Wang, M.A. Miller, R. Frouin, A. Subraminam and B. Balch, 2004: Marine Aerosol Optical Thickness Measured by Handheld Sun Photometers. Remote Sensing of Environment, Vol. 93, pages 87-106.

Miller, M.A., **K.D. Knobelspiesse**, R. Frouin, M.J. Bartholomew, R.M. Reynolds, C. Pietras, G.S. Fargion, P. Quinn and F. Thieuleux, 2004: Analysis of shipboard aerosol optical thickness measurements from multiple sunphotometers aboard the R/V Ronald H. Brown during the Aerosol Characterization Experiment-Asia. Applied Optics, Vol. 44, No. 18, pages 3805-3820.

Knobelspiesse, K.D., C. Pietras and G.S. Fargion, 2003: Sun-Pointing Error Correction for Sea Deployment of the Microtops II Handheld Sun Photometer. J. Atmos. Ocean. Tech., Vol. 20, No. 5, pages 767-771.

Fargion, G.S., B.A. Franz, E.J. Kwiatkowska, C. Pietras, S.W. Bailey, J. Gales, G. Meister, **K.D. Knobelspiesse**, P.J. Werdell, C.R. McClain , 2003: SIMBIOS program in support of ocean color missions: 1997-2003. Proc. SPIE, Vol. 5155.

HONORS

Integrative Graduate Education and Research Traineeship (IGERT) Joint Program in Applied Mathematics and Earth & Environmental Science, Columbia University: Graduate fellow, 2004 to present.

AFFILIATIONS

American Geophysical Union (AGU)
Society for Industrial and Applied Mathematics (SIAM)